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Submission

Authors	Dr. Lillian Barros
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Authors

Name	Dr. Lillian Barros
Email	lillian@ipb.pt
Affiliation	—

Principal contact for editorial correspondence.

Manuscript Submitted by:

Name:
Email:

Title and Abstract

Title	Phytochemicals and their effects on human health
Abstract	The knowledge about the medicinal properties of natural products, including their action a s healthy diet promotors, are widely recognized. Currently, the evidences that natural matr ices possess specific bioactive properties, afforded by their chemical constituents, have be come increasingly clear for the scientific community. Nevertheless, evidences from clinical trials and epidemiologic observations are still demanded, namely regarding the ideal time

ovement.
The fact that natural matrices are a source of bioactive compounds, such as polyphenols, v itamins, carotenoids and unsaturated fatty acids, stimulates its usage in several areas. In addition to the benefits associated with its direct use in the food industry, they may be use d as ingredients in the formulation of functional foods, nutraceuticals and in the pharmace utical industry, for the production of natural drugs (representing a significant portion of th e global pharmaceutical market production). Due to the chemical, nutritional and medicina l properties of these matrices, in recent years there has been an increasing interest in expl oiting their applications in health disorders conventionally treated with chemically synthesi zed products. These therapeutic properties associated to the fact that natural products hav e fewer adverse or side effects have triggered various scientific studies aiming to validate t he use of biologically active substances that can be extracted from these valuable natural sources and justify the worthiness of the ongoing and future research in this field.
In this special issue "Phytochemicals and their effects on human health" those aspects hav e been reviewed. The revision performed by Capuanoa, Dekkera, Verkerka and Oliviero, ev aluates the role of glucosinolates (GLSs) and, more importantly, of their breakdown produc ts (BPs) in both food and pharmacological perspectives. The authors have summarized the liberation, absorption, distribution, metabolism, and excretion (LADME) of GLSs and BPs, r eviewing the evidences for health benefit and toxicological /anti-nutritional effect from GL S consumption both in epidemiological and clinical studies, and deliberate about potential mechanisms of action that are responsible for those effects [1].
Caleja, Ribeiro, Barreiro and Ferreira reviewed recent data on the sector of functional foods and nutraceuticals, highlighting the particular usage of phenolic compounds as bioactive in

gredients, either in functional foods or in nutraceutical formulations. Examples of products already available in the market were also discussed [2].

Pérez-Gregorio and Simal-Gándara evaluated the influence of bioactive food components o n health outcomes [3]. They also reviewed recent trends in the characterization of the poly phenol-protein complexes, the different analytical techniques used, the reactivity of the dif ferent polyphenols according to the structure-activity relationship and the effects of these i nteractions in food quality [4].

The review article presented by Amarowicz and Pegg summarizes the findings to date of b oth in vitro and in vivo studies using foods or phenolic extracts isolated from foodstuffs in the inhibition of the incidence of LDL oxidation [5].

Sokovic, Ciric, Glamoclija and Skaltsa, reviewed the up to date literature on the biological properties of sesquiterepene lactones from Centaurea species, including antimicrobial, anti tumor, antiviral, anti-inflammatory and cytotoxic properties. They also revised the method ologies applied to extraction, isolation and structural elucidation and of lactones as purified compounds [6].

The revision performed by Pereira, Barros and Ferreira intended to provide information con cerning the variations on the definition of dietary supplements, the allowable substances o n it, as well as the marketing and labelling requirements among the USA and the EU legisl ation [7].

Souza, Correa, Andréia, Soares, Bracht, Peralta reviewed the nutritional and therapeutic us es of Agaricus blazei in the last decade giving special attention to the most recent discover ies regarding its chemical composition and clinical investigations [8].

Cámara, Fernádez-Ruiz, Morales and Sánchez-Mata reviewed fiber compounds, such as oli gosaccharides (namely α-galactosides and fructans), arabinoxylans and β-glucans and the usage of these components by the food industry [9].

Petropoulos, Gioia and Ntatsi revised the organosulfur compounds of vegetable origin, mai nly vegetable species belonging to Allium genus and Brassicaceae family, and their health effects. The authors reported the chemical composition, biosynthetic pathways and the me chanisms of action involved in their health effects [10].

The revision performed by Dietz and Dekker deals with an interesting theme about the effe cts of green tea phytochemicals, namely epigallocatechin gallate (EGCG), L-theanine and c affeine on mood and cognition performance [11].

The continuous research on natural products can lead to the new generation of food produc ts, and will certainly promote their medicinal application, being this special issue very sup portive in this matter. The use of nutraceuticals in the prevention and treatment of disease s is considered a powerful strategy by several public health authorities due to its potential in maintaining and promoting human health, longevity and life quality. Today, nutraceutica ls represent a growing segment of the food industry, and undoubtedly the nutritional thera py will take advantage of its beneficial effects. Moreover, natural products have continued t o be significant sources of drugs and lead compounds, being approximately 60% of the an ticancer agents and 75% of the drugs for infectious diseases derived from natural products or derivatives, which confirms its prevailing role and importance. Therefore, natural produc ts have become interesting food components due to their increasing interest in the concep t of "Functional Foods" with "Health benefits".

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